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THE USE OF LYE TO PREPARE WOOD PICNIC TABLES FOR REFINISHING



U.S. DEPARTMENT of AGRICULTURE

FOREST SERVICE

EQUIPMENT DEVELOPMENT CENTER

SAN DIMAS, CALIFORNIA

OCTOBER 1970

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THE USE OF LYE TO PREPARE WOOD
PICNIC TABLES FOR REFINISHING
ED&T PROJECT 1423.1

U.S. Department of Agriculture, Forest Service
Equipment Development Center, San Dimas, California 91773
OCTOBER 1970

INTRODUCTION

Wooden picnic tabletop planks have always posed a cleaning and refinishing problem. There has been a long history of experiments with wood coatings and treatments of various kinds to somehow ease the task of cleaning tabletops. In 1957, the Forest Products Laboratory (FPL) stain was introduced, which proved to be relatively easy to apply and to have a superior resistance to weathering. In spite of being unable to resist the stains of various condiments used by campers and picnickers, it has replaced previous methods of treatment with logwood oils, etc., and remains, to this day, the preferred method of tabletop treatment by the Forest Service.

In 1966, the Equipment Development Center at San Dimas began testing some of the new polyurethane and epoxy varnishes to see if one or more of these products might provide the stain-resistant, impervious coating that was unattainable with FPL stain. Subsequent investigation revealed that the sun's ultraviolet radiation will either destroy the finish or will weather the wood under the coating (thus destroying the top layer of wood cells), which causes flaking and peeling. ¹ Even when damage to finishes is minimized by use of heavy pigmentation or by using extra thick coatings to screen the ultraviolet radiation, the finish will eventually need to be replaced, usually with great difficulty and expense. No satisfactory, impervious coating has yet been found for wooden picnic tables.

In 1969, a method of cleaning and refinishing wooden tables, which had been successfully used in the Deschutes National Forest for eight years, ² was referred to the Equipment Development Center at San Dimas for evaluation.

The basis of the cleaning method is a lye-detergent solution, which cuts grease and oils, removes old FPL finish, and chemically sands the wood surface in preparation for retreatment with FPL stain. The treatment lends itself to annual refinishing of picnic tables with a minimum expenditure.

Materials Needed:

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|--|-------------|
| 1. Lye (sodium hydroxide) GSA 6810-270-8177, 13 oz. cans | \$0.16 each |
| 2. Detergent, GSA 7930-530-8067 | 1.05 gal. |
| 3. Stain (FPL), GSA 8010-837-7964 or similar | 2.40 gal. |

Also needed will be two buckets, scrub brushes (preferably made of synthetic materials), and a source of rinse water under pressure from the site water system or a fire pumper.

¹/ USDA Forest Service Research paper, FPL74, May 1967, "Microscopic Observations of Ultraviolet Irradiated and Weathered Softwood Surfaces and Clear Coatings."

²/ Gerald R. Benson, Allen B. Cravens, and William C. Brown, Recreation crewmen of the Deschutes National Forest, submitted this method as an employee suggestion in 1968.

Safety

The hazard from chemical burns is very great. Each man must, at a minimum, use safety goggles and rubber gloves in good condition. In addition, it is strongly recommended that a long sleeved shirt be worn for arm protection and that rubber boots and a laboratory apron be worn for additional protection of clothing and person (fig. 1). A bucket of clear water should be kept nearby at all times while working with the lye solution in case it is needed to flush the eyes or skin.



Figure 1. Protective clothing.

Procedure:

1. Put on rubber gloves, goggles, and other protective clothing.
2. Draw a bucket of water for use in case some of the solution gets on the skin or in the eyes.
3. Mix one 13-ounce can of lye, one capful of detergent, and three gallons of water.
4. Liberally apply this solution to tabletops and seats. Allow to stand for 10 to 15 minutes.
5. Scrub the tabletop and seats. Use care that the solution is not needlessly splattered by over-exuberant use of the scrub brush. The solution will do most of the work. Keep the bucket of clean water nearby in case it is needed.

There may be a temptation to climb on top of the table and scrub with a broom so as to avoid the mess and splatter of the scrubbing operation. It is recommended that this not be done, since the table becomes very slippery with solution and dissolved cellulose and there is a distinct risk of a serious fall.

6. Rinse the table of all solution and other remains of the chemical sanding.
7. After the table is thoroughly dry, apply one coat of FPL stain.

The resulting finish will not be impervious to moisture or stains but will be quite "resistant" for a year. The economy of this cleaning and refinishing method makes annual renewal of the resistant finish practical. Presently, this method of treating wood picnic tables is adequate and the most economical that we have evaluated.

APPENDIX

Test Procedure

This method of cleaning and refinishing tables has been in use since 1959 on the Deschutes National Forest. Clean, attractive tables can be maintained successfully by the annual use of this procedure at an average cost of \$4.50 per table.

The procedure was further tested at the Equipment Development Center at San Dimas in 1969 in the following manner and is pictured as follows:

Figure 2. A 14B heavy plank table with Douglas-fir planks was sanded clean of old finish, dirt, etc.



Figure 3. Liberal amounts of catsup, mustard, coffee, olive oil, mayonnaise, Italian salad dressing, barbecue sauce, cheese salad dressing, and motor oil were applied to the tabletops.

Figure 4. After 30 days aging in the sun, most non-oil or light oil condiments have bleached or oxidized away. Those left have penetrated deeply.



Figure 5. After chemical sanding with lye-detergent solution, light spots can be seen where the heaviest grease stains were formerly located.

